Dr Buckley
with the author's respects

June 1841

OBSERVATIONS

ON THE

CURE OF STRABISMUS,

WITH ENGRAVINGS;

BY

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WITH AN APPENDIX

ON THE

NEW OPERATION

FOR THE CURE OF STAMMERING.

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PREFACE.

The branch of Medical Science, which relates to the rectification of deformities, may almost be said to have had its commencement within the last ten years. Before that period, it is true that some deformities existing in children were occasionally treated with success. But the true principles of the treatment were imperfectly understood, and the whole subject was overlooked or neglected by the great mass of the profession. And the treatment which was adopted, imperfect as it was, was so entirely limited in its application to

the period of childhood, as to have received the appellation of *orthopædia*,* which it still retains. Insulated attempts were indeed made by Thilenius, Sartorius, Michaëlis, Delpech, &c., to cure deformities in adults, and with a certain degree of success; but their methods were imperfect, and never obtained the general approbation of the medical profession. To the distinguished Strohmeyer of Hanover is undoubtedly to be ascribed the honour of having contributed more than any other individual to the development of the true principles of this department of surgery. Since the time when he first made known to the profession the results of his investigations, other surgeons have entered upon the same field,

* From ορθος straight and παις child.

and have prosecuted their researches with distinguished zeal and ability. The results have been of the most satisfactory character. Deformities of the limbs and even of the trunk, which but a few years ago would have been considered as entirely incurable, are now daily treated with success. And there are comparatively few distortions of the human frame, even when existing at an advanced period of life, which at the present time can be regarded as beyond the reach of surgical aid.

The operation for the cure of strabismus is one of the most recent applications of the principles which have previously been carried out in the treatment of other classes of deformities. The division of the muscles of the eye for the cure of squinting was first sug-

gested by Anthony White of London, who demonstrated its practicability by performing it on several animals.* The same suggestion was afterwards thrown out by Strohmeyer; but it was not carried into execution on the living human subject until the 26th October, 1839, when the operation was successfully performed by Dieffenbach of Berlin, by whom it has since been repeated a great number of times. The report of Dieffenbach's successful operations was rapidly and extensively circulated through the journals of Europe and America, and it was received every where with enthusiasm. Within a single year the operation has been performed in many hundreds of cases

* See London Medical Gazette, Sept. 1840. Page 928.

by numerous operators in different countries. The result, although not uniformly successful, in the large majority of cases has been highly satisfactory, and the operation may now be considered as having been sufficiently tested, in order to claim a place among the established resources of surgery. But few cases have been made known to the profession, in which any positively injurious consequences have resulted from the operation; and when these consequences have occurred, they have probably been owing for the most part to the ignorance or awkwardness of the operators.

In the present essay, I propose to furnish a brief statement of the most important facts which are known with regard to the successful treatment of

strabismus. It is not my intention to present an analysis of all that has been said or written on the subject, but to select from published records as well as from my own observation and experience, such facts as may appear to me to be useful in guiding the profession to correct practical views. In composing this essay, I shall feel myself at liberty, as occasion shall require, to make use of the same materials, and to employ the same language as in an article which I prepared for the seventh number of the New-York Journal of Medecine and Surgery.

Leroy Place, *June 5th*, 1841.

STRABISMUS.

The term strabismus or squinting is employed to designate any distorted position of the eye, occasioned by irregular contractions of one or more of its muscles. This irregular contraction may affect any of the muscles of the eye, and consequently the distortion may be in any direction. But by far the most common of these distortions is that in which the pupil is turned directly inward, or inward and a little upward: and it is this alteration in the direction of the pupil, which is com-

monly known as strabismus convergens. The opposite distortion, which is known as strabismus divergens or leer, is next in frequency. The other varieties of strabismus, viz. those in which the pupil is turned upward or downward, are very rarely met with.

In ordinary cases of strabismus, the eye is not invariably fixed in one position, but enjoys a greater or less degree of motion. The motions of an eye affected with strabismus are much more free when the sound eye is closed than when it is open. It sometimes happens that a patient nearly ceases to squint during the time when the eye is examined by a surgeon, or while his own attention is strongly fixed upon the organ. Cases are occasionally met with, in which the distortion is perma-

nent, the eye being constantly fixed in one position.*

It rarely, if ever, occurs, that both eyes become simultaneously affected with strabismus. But it is frequently the case, after one eye has been affected for a longer or shorter time, that the other eye becomes distorted in a similar manner: the degree of the distortion is almost invariably greatest in the eye which was first affected.

In the great majority of cases, strabismus commences in early childhood: it seldom exists at the time of birth. In some cases it appears to be hereditary. Its exciting causes are numerous. In some cases it occurs after an acute attack of sickness, especially when a

* The term luscitas has been employed to designate this form of squinting.

powerful impression has been made upon the nervous system. Sometimes it follows in the train of epilepsy, chorea, and other nervous diseases. It sometimes occurs as a consequence of mechanical injuries of the head or of the eye itself. In many cases it is the result of strong impressions made upon the mind, especially of terror. It is not unfrequently produced by imitation, or by being in the presence of another child affected with the same deformity: when produced in this manner, it sometimes occurs suddenly, and at other times gradually. It is often owing to some previous defect in the vision of the eye which is distorted.

Strabismus is always the result of one of two proximate causes, which are of an opposite character. The first is a

primary shortening or spasmodic contraction of the muscle by which the eye is distorted. The second is paralysis more or less complete of the antagonist muscle.

The most striking effect of strabismus is the deformity which it occasions, frequently subjecting the patient during childhood to ridicule and insult, and being throughout life a source of mortification and mental disquietude. The sight of the affected eye is generally weakened, often to a very considerable degree. In many cases, it is difficult to determine to what extent the weakness of sight is the effect or the cause of the distortion. In some cases there is double vision which may be a source of much inconvenience.

As a general rule, strabismus has no

tendency to a spontaneous cure: and it is more apt to be increased than diminished by the progress of time. There may, however, be some exceptions to this statement. There are certain cases, in which squinting is a mere symptom of some disease of the nervous system, and in which it passes away with the disease to which it owed its origin. A variety of expedients have at different times been resorted to for the cure of squinting, which it is needless to mention in this place, as they have all been alike ineffectual in removing the deformity, except perhaps in very slight cases. And there is no reason to believe that the plan, which has been recently adopted by Curtis of London, is entitled to any more consideration than those which have pre-

ceded it. The only known remedy, which can be relied on for the treatment of confirmed cases, is the new operation of dividing the contracted muscles. With regard to the details of this operation, there is some diversity of practice among different surgeons. The following rules appear to me to comprise all that is essential to the successful performance of the operation. They apply particularly to the division of the rectus internus; but, with some slight modifications, they will be equally appropriate for the division of either of the other muscles which may require to be cut.

The operator should secure the assistance of at least two skilful aids; it is best to have three if they can be obtained. The patient may be placed in

a sitting posture, facing a window, with his head leaning against the breast of an assistant, or he may lie upon a table or sofa. If the subject of the operation be a child, it is decidedly best to place him in a recumbent posture upon a table, with his arms by his side, and to pass a folded sheet around the body of the patient and the table upon which he lies, so as to prevent him from moving. Having secured the patient in a proper position, it is advisable to apply iced water or snow for a few minutes over the closed eye-lids, for the purpose of contracting the vessels of the conjunctiva, and diminishing the hemorrhage during the operation. I regard this as a matter of some importance, as the hemorrhage, although unimportant in itself, constitutes one of the chief ob-

stacles to the speedy and successful performance of the operation. The next thing to be accomplished is the separation of the eye-lids, which may conveniently be effected by the fingers of assistants. The upper lid may be secured by the assistant who supports the head of the patient, and the lower, by one who sits or kneels before him. Where there are but two assistants, the same one may secure both lids. More skill is required in holding the lids than is commonly supposed. It is not sufficient to draw the integument of the lid away from its fellow, but the edge of the tarsus should be gently but firmly compressed against the orbital brim. A great variety of specula have been contrived for the purpose of separating the lids, and there has been much dis-

cussion as to the advantages or disadvantages attending the employment of these instruments; some representing them as almost essential to the proper performance of the operation, while others regard them as rendering it more painful and more formidable to the patient, while they present no advantages to compensate for these inconveniences. I have never myself made use of specula, and I regard them as unnecessary and undesirable in the majority of cases, when the surgeon has provided himself with assistants who are skilful in holding the lids with their fingers. But when no such assistants are at hand, it is far better to employ specula, even at the expense of some additional pain to the patient, than that the lids should be badly secured, by which great embar-

rassments may be thrown in the way of the operation.* The attempt to fix the eye-lids, either with the fingers or with specula, sometimes gives rise to a spasmodic contraction of the orbicularis muscle, causing a protrusion of the palpebral conjunctiva, by which the farther progress of the operation is seriously impeded. When this occurs, the attempt should be suspended for a minute or two, and then resumed with the utmost caution and gentleness.

The sound eye during the operation, is to be covered with a bandage or with the hand of an assistant, to enable the patient to direct the affected eye outwards, which it has been ascertained by experience that he can do most

* In operating on children, it is perhaps best as a general rule to employ specula.

effectually, when the light is excluded from the sound one. The patient is then directed to turn the eye outward as far as possible towards the temple, by which means the portion of the eye-ball, into which the rectus internus is inserted, is fully exposed to view. There has been much controversy with regard to the best method of fixing the globe of the eye during the operation. Some rely for this purpose on the efforts of the patient, assisted, if necessary, by gentle pressure with the fingers of the assistant who holds the upper lid. Others employ single or double sharp pointed hooks, which are introduced into the sclerotica, or simply into the conjunctiva, and are then held by an assistant in such a direction as to draw the eye gently outward. In adults and in per-

sons possessing a good degree of firmness, I am convinced that the eye may be kept sufficiently steady without the aid of hooks or other mechanical contrivances, and in such cases it is desirable to dispense with them. I have never but once employed a hook for this purpose, and in ordinary cases I would not recommend its use. But in children, and in nervous and irritable patients, great embarrassment may result from the attempt to perform the operation without fixing the eye. And I am of opinion that it is decidedly better to fix the points of a small double hook in the sclerotica, than to trust to a hook passed through the conjunctiva, as some surgeons have recommended. When the points of the hook are inserted no deeper than the conjunctiva,

it is difficult to fix the eye, and the instrument is liable to tear its way out, by which the cornea and other parts are in danger of being lacerated. In passing the hook into the sclerotica, it should not penetrate the whole thickness of that membrane, so as to injure the choroid membrane or retina.

The next step in the operation is to make an incision through the conjunctiva and the subjacent cellular tissue, so as to expose to view the insertion of the rectus internus muscle. According to the usual method a fold of the conjunctiva is seized between the blades of a small forceps, about midway between the margin of the cornea and the membrana semilunaris: an incision is then made through the conjunctiva in a vertical direction, from a quarter

to half an inch in length by means of a small scalpel or scissors. When the operation is performed in this manner, the blood which is effused from the divided vessels is apt to be infiltrated into the cellular tissue, producing a swelling of the part, and obscuring the muscle which is to be divided. To obviate this inconvenience, I excise with the scissors the fold of the conjunctiva which is held between the blades of the forceps: this may be done either in the direction of the fibres of the muscle, or in a vertical direction. In this way there is much less infiltration of blood, and the insertion of the muscle is more readily and more fully exposed to view. The blood, as it flows during the operation, should be wiped off by an assistant with a fine sponge wet with iced

water. A curved probe or director, or a small blunt hook is then passed under the muscle from its inferior to its superior edge, and by means of a small pair of blunt pointed scissors curved in the direction of its edges, the muscle is divided near its insertion. Before dividing the muscle, it is well to isolate it from the eye-ball to the distance of half an inch backward from its insertion. This may conveniently be done with a second probe or blunt hook, while the first is placed under the insertion of the muscle so as to fix the globe of the eye firmly in one position. It is more convenient to employ blunt hooks with handles than ordinary probes or directors, although either of these instruments in skilful hands may

be sufficient for the purpose.* A person who is familiar with the anatomy of the parts, and who has practised the operation sufficiently often on the dead subject, may introduce the blunt hook beneath the muscle and bring it forward, without waiting for the hemorrhage to cease so that the muscle can be distinctly seen. There is often some difficulty in making the point of the hook to emerge from the cellular tissue which covers the muscle: it may either be pushed through by a slight degree of force, or, what is better, the cellular tissue over it may be divided with scissors. The division of the muscle should be as near as possible to its in-

* The instruments which I employ in the operation for strabismus are manufactured by Messrs. Goulding & Co. No. 35½ Chatham-street.

sertion, as any portion of it which may remain attached to the sclerotica will be likely to form an unseemly prominence after the operation. It may perhaps be advantageous to divide the muscle a sixth of an inch behind its insertion, and then to snip off with scissors the portion remaining attached to the sclerotica. The posterior portion of the muscle, if it be not spontaneously retracted, should be pushed back into the orbit to prevent it from reuniting to the anterior portion of the sclerotica. The eye is now left at liberty; and when the muscle is completely cut across, the pupil is commonly directed forward, and in some cases slightly outward. If the pupil be directed at all inward, either by an effort of the patient, or by involuntary muscular ac-

tion, there is reason to suspect that the division of the muscle has not been complete, and it is well to examine carefully by means of a probe or blunt hook, whether there are not some bands of connection between the body of the muscle and the sclerotica. If any such bands be found, they should be divided with scissors.* In these cases the sclerotica should be fully exposed to view behind the insertion of the muscle. Some surgeons affirm positively, that any remaining power of turning the eye inward is a proof that the division of the muscle has been incomplete. Others assert that there are cases in

* The muscle at its insertion is of considerable breadth, and the blunt hook is often introduced in such a manner as to split its fibres, instead of embracing them all in its concavity. For the breadth of the muscle at its insertion, see Fig. 1.

which, after the complete division of the muscle, the patient retains the power of turning the eye inward to a greater or less degree. The latter statement is confirmed by my own experience in this matter. Any flap of the conjunctiva, which in the progress of the operation is extensively detached from its connections, may advantageously be snipped off with scissors. The treatment after the operation consists in the application of cooling lotions to the eye, and a mild antiphlogistic regimen. The operation is rarely followed by such a degree of inflammation as to require very active treatment. The eye is disfigured for a few days by ecchymosis of blood which is gradually absorbed. The operation is ordinarily attended with but a slight amount of

pain to the patient. When specula are employed to fix the eye-lids, they occasion a considerable degree of pain. The same result follows even when the lids are secured by the fingers of assistants, whenever the patient makes any forcible attempts to close the eye. He should therefore be cautioned as to the importance of remaining passive until the operation is completed. More or less pain is always felt when the muscle is put on the stretch by the blunt hook which is introduced beneath it. Occasionally severe pain is felt in the eye a few hours after the operation, being occasioned by the presence of coagulated blood between and within the lids, gluing them together. This may be obviated by anointing the edges of the lids with simple cerate, immediately

after the operation. When it has occurred, the eye should be bathed with tepid water, and the coagulated blood washed away, after which the pain at once ceases or is greatly diminished. I have observed one instance, occurring in a gentleman of plethoric habit, in which the operation was followed by a high degree of inflammation of the conjunctiva, attended with chemosis, and requiring active general and local depletion.

A number of cases have been reported, in which, after the operation, the strabismus has not been entirely removed, but the eye has been still somewhat inclined inwards. In some of these cases the distortion has subsided spontaneously after a few days. In others it has yielded to the division of

the rectus internus of the other eye: in these cases it is supposed that the persistence of the deformity was due to the existence of a morbid sympathy between the two organs. Some surgeons, in cases of this kind, have recommended the division of the internal fibres of the rectus superior or inferior, or the division of the obliquus superior. This plan has been adopted in a few cases, but there has not been a sufficient amount of experience to warrant any general conclusions as to the advantages to be derived from the practice.* When strabismus is owing to complete paralysis of the rectus externus muscle,

* It does not appear to me to be a rational practice to divide the obliquus superior in these cases, as the action of that muscle is to roll the pupil outwards and not inwards.

the division of the rectus internus will not restore the eye to its proper position.* It sometimes happens after the operation, that the eye which was previously sound begins to squint. If this condition should not soon yield spontaneously, it will be necessary to perform the operation on the second eye.

When both eyes are affected with strabismus, some surgeons recommend that the operation should always be first performed on the eye which was primarily affected, as the second eye may yield spontaneously after the first has been cured: the second eye may be operated on at a subsequent period, if the deformity continue. Other sur-

* In a case of this kind, Dr. Detmold has drawn the eye outward by means of a thread attached to the divided extremity of the rectus internus.

geons, on the contrary, are of opinion, that it is best to operate on both eyes at the same sitting.

It frequently happens after the operation, that fungous growths proceed from the wound of the conjunctiva; if these do not subside spontaneously in the course of two or three weeks, they may be snipped off with scissors, and the surface from which they grow may be touched with nitrate of silver.

After the operation, the eye is apt to protrude somewhat from the orbit so as to appear larger than the other eye. In some cases this undue prominence of the eye is very marked, and constitutes an absolute deformity. This occurs chiefly in those cases in which more than one of the straight muscles have been divided, and it is owing to the undue action of the oblique mus-

cles. It constitutes a serious objection to the division of more than one of the straight muscles in the same eye.

The operation is in some instances followed by weakness of vision in the eye on which it has been performed, or by double vision. But both of these inconveniences sooner or later subside spontaneously. As a general rule, the ultimate effect of the operation upon vision is decidedly favourable.

In order to secure the permanent success of the operation, the patient should be directed after a few days to accustom himself to the use of the eye which has been operated on. For this purpose, it is well to cover the sound eye with a bandage, during a period of several hours every day. It is also advantageous frequently to direct outward

as far as possible the eye which has been subjected to the operation.

With regard to the liability to a return of the strabismus, after it has once been cured, there is some difference of opinion; but the majority of those surgeons, who have expressed their views on the subject, are of opinion that there is not often reason to apprehend a return of the distortion, after the operation has been properly performed. When it does occur, it is chiefly in persons who have neglected the proper precautions relating to the exercise of the eye. In such cases, the operation requires to be repeated, and the second operation, according to Ammon, may be performed as early as the third week after the first. The second operation is usually attended with greater difficul-

ties than the first, in consequence of the consolidation of the tissues which require to be divided. It is also necessary to pass the blunt hook to a greater depth, on account of the adhesion of the muscle to the sclerotica some distance behind its original insertion.

In a large proportion of cases, strabismus is attended with more or less weakness of vision in the affected eye. In such cases, there has been generally a decided improvement in the vision of the eye, after the operation.

There are some cases of strabismus in which the operation ought not to be performed. Such are the cases in which the cause of the distortion is still in operation, as where it is connected with chorea or epilepsy. The operation ought not to be performed in recent

cases, where it remains doubtful whether the deformity will be persistent. It also seems to be contra-indicated in those cases in which the distortion was preceded by great weakness of vision in the affected eye, causing disturbance in the sight of the sound one: in some cases of this kind, in which the operation has been performed, although the deformity has been removed, the effect on vision has appeared to be injurious.

The observations which have been made in relation to the operation for the division of the rectus internus muscle, will apply with some slight modifications to the division of either of the other muscles of the eye. Occasionally the operation will require to be performed on the rectus externus, but rarely if ever upon the rectus superior

or rectus inferior. And I have strong doubts whether, under any circumstances, it will be found advantageous to divide either of the oblique muscles. In addition to the rules which have already been laid down for the division of the rectus internus, a proper knowledge of the anatomy of the other muscles of the eye will be a sufficient guide to the operator, if he should think it necessary to divide either of them. There is a diversity of opinion among different operators as to the degree of success which is to be expected from the division of the rectus externus in cases of strabismus divergens; some asserting that but little improvement in the appearance of the eye results from the operation, while others affirm that they have entirely succeeded in removing the deformity.

It has occasionally happened in the performance of the operation for strabismus, that the sclerotic coat of the eye has been divided, and the humours have been evacuated. This is an accident, which implies a great degree of awkwardness in the operator, and it should be a warning to bunglers to abstain from rash experiments, where so important an organ as the eye is concerned. The operation is safe and simple, when performed by a skilful operator; but it is beset with difficulties and dangers, when it is undertaken by persons who are destitute of accurate knowledge and of practical skill in surgery.

PLATES.

The plates which are inserted in this volume have been drawn from nature with great care; and their accuracy may be relied on. Especial care has been taken to give a correct view of the breadth of the muscles, and of the distance of their insertion from the margin of the cornea.

Fig. 1*st.* Relations of the Rectus Internus, and Obliquus Superior.

A, Insertion of the Rectus Internus.

B, Cartilaginous Pulley of Obliquus Superior.

C, Fleshy belly of Obliquus Superior, between its origin and the pulley.

D, Tendon of Obliquus Superior passing from the pulley beneath the Rectus Superior, outwards and backwards to its insertion.

Fig. 1.

Westmacott Del. ad Nat.° 1841

N. Currier's Lith.

PLATES.

Fig. 2*d.* Relations of the Rectus Inferior, and Obliquus Inferior.

A, Insertion of Rectus Inferior.

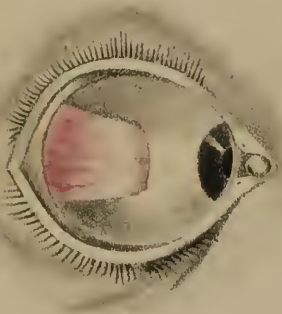
B, Obliquus Inferior, passing beneath the Rectus Inferior outwards, backwards, and upwards to its insertion.

Fig. 2.

PLATES.

Fig. 3*d.* Insertion of Rectus Externus.

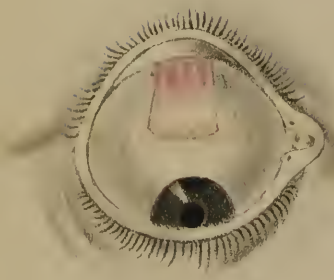
Fig. 3.



PLATES.

Fig. 4th. Insertion of the Rectus Superior.

Fig. 4.



Whitmarsh Del'xit Nat.ª 1841

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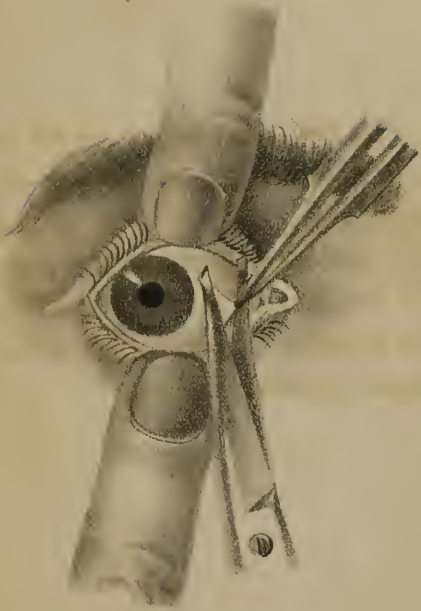
PLATES.

Fig. 5th. First stages of the operation, representing the manner of separating the eyelids, the fold of conjunctiva embraced between the points of the forceps, and ready to be divided by the scissors, whose convex surface is turned towards the eye.

Fig. 5.



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N. Currier's Lith.

PLATES.

Fig. 6th. Conclusion of the operation, exhibiting the blunt hook introduced beneath the insertion of the Rectus Internus, which is about to be divided by a small pair of blunt pointed scissors.

Fig. 6.

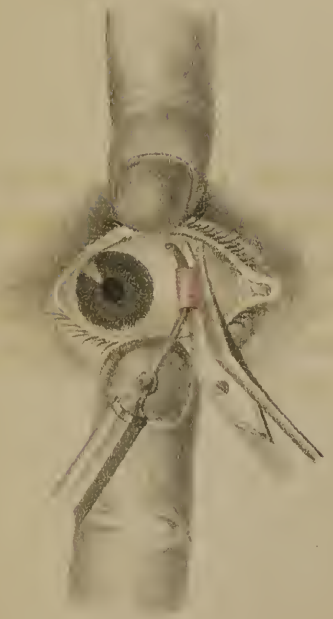

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Fig. 7.

A. Genio-hyo-glossus.
B. Genio hyoideus.

APPENDIX

ON THE NEW OPERATION FOR THE CURE OF STAMMERING.

The division of muscles, which has been resorted to with such marked benefit in the treatment of various kinds of deformities, is undoubtedly capable of still more extended application. Since the commencement of the present year, it has been successfully applied to the cure of stammering. The operation for the removal of this distressing infirmity is due to the genius of Dieffenbach, to whom science and

humanity have before been so largely indebted. This distinguished surgeon, regarding stammering as the result of a spasmodic condition of the muscles of the tongue, and being aware of the benefits resulting from the division of muscles in other spasmodic diseases, conceived the project of dividing some of the more important muscles of the tongue for the cure of this infirmity.

He proposes three different modes of operating, each of which he has submitted to the test of experience.

1st. A transverse section of the root of the tongue, extending through nearly its whole thickness.

2d. A subcutaneous transverse section of the root of the tongue, through a puncture of the mucous membrane.

3d. A transverse section of the root

of the tongue, with excision of a triangular piece throughout its whole breadth and thickness.

Dieffenbach gives the preference to the last of these three methods.

In all of them the tongue is drawn out with hooked forceps, and after the incisions have been made, the wounds are united with sutures. The wounds usually heal very readily, and without any unpleasant consequences.

He performed his first operation on the 26th January, 1841. At the date of his report to the French Academy, he had operated on nineteen patients, some of whom at the time of the report remained under treatment. In all there was a prospect of a successful result. Since the date of that report, Dieffenbach has operated on a number

of additional cases. One of his patients died from the hemorrhage which occurred during the operation.

The operation has been repeated a considerable number of times in Paris by Amussat, Baudens, Velpeau, &c. &c. by whom it has been essentially modified, and rendered easier to the surgeon, and less formidable to the patient. It is perhaps not yet fully determined which method of operating is likely to be attended with the most complete success.

Amussat pursues the following mode of operating.

1st. He separates with a bistoury the frænum linguæ from its attachment to the lower jaw, and divides the fibro-cellular membrane beneath it. In a few cases, he has found this part of the

operation to be of itself sufficient to restore freedom of speech.

2d. He divides the genio-hyo-glossi muscles at their origin from the lower jaw. The wound generally heals in about eight days. Amussat had operated on seventy-five patients at the time of his report on the 19th April, 1841. The benefits resulting from the operation were in some cases observed immediately, and in others, after an interval of several days. In some, the success was so complete, that scarcely any vestige of the stammering remained; in others, although there was a decided amelioration, a certain degree of stammering still continued.

Amussat has had some cases followed by troublesome hemorrhage, which he has generally arrested by the free

use of ice; sometimes by introducing compresses of lint, and making pressure on them with two fingers of each hand introduced into the mouth, while the thumbs are applied below the chin. In one case only it was found necessary to make pressure by means of a hard body applied over the lint. If these means should fail, he recommends the use of styptics or of the actual cautery.

Baudens operates in the following manner. An assistant stands behind the stammerer, and holds his head slightly thrown back, with his mouth widely opened, and the two little fingers of the assistant in the angles of the mouth, drawing back the lips. The surgeon with his left hand holds a sharp hook, which he inserts into the

frænum linguæ, near the insertion of the genio-hyo-glossi, which he thus puts on the stretch. He then plunges the points of a sharp pair of scissors on each side of the origin of the muscles, to the depth of about an inch, and by closing the scissors divides the muscles. If any fibres remain undivided, he cuts them with a probe-pointed bistoury.

Velpeau divides the genio-hyo-glossi, sometimes with a narrow bistoury, through a puncture of the mucous membrane, and sometimes with scissors, dividing the mucous membrane more extensively. In one case, in which the tongue was of extraordinary length, he cut out a triangular portion from the anterior part of the organ, and brought the sides together with sutures.

I have performed the operation a single time, and I am not aware that it has been undertaken by any other surgeon in this country. The case was an unfavourable one, as it occurred in a patient who had a remarkable congenital derangement of his whole muscular system. As the whole subject is still new to the profession, I will venture to communicate the details of the case.

J. B. aged 36 years, came under my care more than a year ago, for the treatment of talipes varo-equinus of the right foot. In addition to this deformity, he had inversion of both lower extremities at the hip joints, which were at the same time remarkably rigid. The movements of his upper extremities, as well as of his head and trunk, were also extremely awkward,

and of a spasmodic character. He was also affected with thickness of speech, and with stammering. All the muscles of his body, when in action, seemed to start from their places, and to acquire an extraordinary degree of tension. This spasmodic condition of the muscular system was said to be congenital. At different times I divided the tendo Achillis, the plantar fascia, the tendons of the tibialis anticus and posticus, of the flexor longus pollicis pedis, the ten extensor tendons of the toes, the peroneus longus, the semimembranosus and semitendinosus, the gracilis, the adductor longus, and the tensor vaginæ femoris of the right side. I also divided the tensor vaginæ femoris, and the adductor longus of the left side. I had occasion

to repeat the division of several of these tendons. The operations were followed by a very slight degree of irritation. By means of them in connection with mechanical extension, the right foot was straightened, and the patient was enabled to stand with his toes turned outward in a graceful position. But whenever he attempts to walk, the inversion of the limbs returns.

On the 21st May, 1841, I performed on him the operation for stammering, according to the method pursued by Baudens of Paris. The mouth being widely opened, I plunged the points of a strong pair of scissors, on each side of the frænum linguæ, and as closely as possible to the lower jaw, to the depth of nearly an inch from the floor of the

buccal cavity, embracing the origin of the genio-hyo-glossi muscles between the blades of the scissors, by closing which the muscle were divided. I then introduced my finger into the wound, and feeling one or two bands of fibres which had not been cut by the scissors, I completed the division with a narrow bistoury. The tongue was immediately retracted to the back part of the mouth, so that its apex was an inch and a half behind the incisor teeth. A moderate hemorrhage followed the operation, and it seemed to be restrained by the introduction of a sponge dipped in vinegar into the wound. Immediately after the operation, the effort to speak was painful, and the articulation was feeble and indistinct, but without stammering. Soon after, I left the patient, and did

not see him again until after the lapse of three hours; when, to my surprise, I found that the hemorrhage had continued, and that he had become pale and faint. The whole quantity of blood lost probably amounted to from one to two pints. I soon succeeded in arresting the flow of blood by the application of pounded ice beneath the chin, and by applying ice also within the mouth. The blood had become infiltrated into the cellular tissue so as to produce a considerable degree of tumefaction. He also complained of a feeling of soreness in the throat, and of difficulty in swallowing.

May 25th. The swelling, soreness, and difficulty of swallowing have diminished, and the articulation has become somewhat stronger and more dis-

tinct. The tongue continues to be retracted, but the patient is able by an effort to thrust it forward. He is able to count from one to twenty rapidly without stammering.

June 4th. The patient has continued to improve; the wound has nearly healed. The thickness of speech has not been very materially modified by the operation, but the stammering appears to have been in a great measure cured. When the patient speaks, the features are still distorted, and there is some hesitation in commencing; but he is able without difficulty to go through the alphabet, and to articulate every variety of sound. He states that he has far greater liberty of speech than he has enjoyed at any previous period of his life.

It will give me pleasure at a future period to furnish the further particulars of this case to any persons who may feel interested in it.

In reviewing the case, I think that the hemorrhage might have been arrested very soon after the operation by the timely and free application of ice. But I had been led by the reports of Baudens, which were the only ones which I had at that time seen, to believe that there was no reason to apprehend that the bleeding would continue longer than a few minutes. I am inclined to the opinion that the operation might be advantageously performed by making an incision with a narrow bistoury immediately behind and below the chin.

Upon the whole, I am disposed to

regard the French mode of operating as safe and effectual, while I would reject the German method as difficult of execution, and fraught with dangerous consequences to the patient.

THE END.